

# Claims

- [c1] 1.A method for performing density checking on an integrated circuit (IC) design, the method comprising the steps of:
- establishing an evaluation array including an array element for each evaluation window of the IC design, wherein a number of evaluation windows is based on a smallest necessary granularity;
  - performing a single pass through shape data for the IC design to populate each array element with a shape area of a corresponding evaluation window;
  - and
  - performing density checking by iterating over the evaluation array using a sub-array.
- [c2] 2.The method of claim 1, wherein the sub-array substantially covers a preferred density rule window granularity.
- [c3] 3.The method of claim 2, wherein each sub-array has a size that is a multiple of the smallest necessary granularity of the evaluation window.
- [c4] 4.The method of claim 1, wherein the populating step

includes unioning disparate polygons within an array element.

[c5] 5.The method of claim 1, wherein the populating step includes tiling disparate trapezoids within an array element.

[c6] 6.The method of claim 1, wherein the establishing step includes establishing an evaluation array for a repetitive part of the IC design.

[c7] 7.The method of claim 1, wherein the evaluation array is initialized to zeros.

[c8] 8.A system for performing density checking on an integrated circuit (IC) design, the system comprising:  
means for establishing an evaluation array including an array element for each evaluation window of the IC design, wherein a number of evaluation windows is based on a smallest necessary granularity;  
means for performing a single pass through shape data for the IC design to populate each array element with a shape area therein; and  
means for performing density checking by iterating over the evaluation array using a sub-array.

[c9] 9.The system of claim 8, wherein the sub-array substantially covers a preferred density rule window granularity.

- [c10] 10.The system of claim 9, wherein each sub-array has a size that is a multiple of the smallest necessary granularity of the evaluation window.
- [c11] 11.The system of claim 8, wherein the populating means unions disparate polygons within an array element.
- [c12] 12.The system of claim 8, wherein the populating means tiles disparate trapezoids within an array element.
- [c13] 13.The system of claim 8, wherein the establishing means establishes an evaluation array for a repetitive part of the IC design.
- [c14] 14.The system of claim 8, wherein the establishing means initiates each array element to zero.
- [c15] 15.A computer program product comprising a computer useable medium having computer readable program code embodied therein for performing density checking on an integrated circuit (IC) design, the program product comprising:
- program code configured to establish an evaluation array including an array element for each evaluation window of the IC design, wherein a number of evaluation windows is based on a smallest necessary granularity;

program code configured to perform a single pass through shape data for the IC design to populate each array element with a shape area therein; and program code configured to perform density checking by iterating over the evaluation array using a sub-array.

- [c16] 16.The program product of claim 15, wherein the sub-array substantially covers a preferred density rule window granularity.
- [c17] 17.The program product of claim 15, wherein each sub-array has a size that is a multiple of the smallest necessary granularity of the evaluation window.
- [c18] 18.The program product of claim 15, wherein the populating program code unions disparate polygons within an array element.
- [c19] 19.The program product of claim 15, wherein the populating program code tiles disparate trapezoids within an array element.
- [c20] 20.The program product of claim 15, wherein the establishing program code establishes an evaluation array for a repetitive part of the IC design.